

Remarks

The Office Action has been reviewed with care and certain amendments made to claims 1, 16, 17 and 46-52 which are believed to place this application in condition for allowance. Applicants appreciate the attention of the Examiner to this patent application

35 USC 112 rejection

Claim 53 was rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. In addition to the originally filed claims lacking a claim 52, they included two claim 46's. In order to correct such numbering errors, the second originally filed claim 46 has been renumbered to be claim 47 and claims 47-51 have been likewise amended such that claim 53 properly depends from claim 52 (previously claim 51).

35 USC 102(b) rejections

Claims 1-11, 18, 39, 45-50 and 54 were rejected under 35 USC 102(b) as being anticipated by Stang et al.'s "Plant Growth Regulators Alter Fruit Set and Yield in Cranberry (*Vaccinium Macrocarpon* Ait.)", *Acta Horticulturae* 241, 1989, pp. 277-283.

Regarding independent claims 1 and 39, the Office Action states that Stang et al. discloses "applying to cranberry plants a plant growth regulating compound such that the cranberries have a mature mass of less than about 0.75 grams/cranberry." Claim 1 is herein amended to require that substantially every cranberry have a mature mass of less than about 0.75 grams. Claim 39 requires that "substantially all the cranberries have mature masses of less than about 0.75 grams."

Stang et al.'s Tables 1 and 3 list the number of cranberries which are 0.5 grams, between 0.6-1.0 grams, and over 1.0 grams. As can be seen, every plant which was treated with a growth regulator has a majority of cranberries in the 0.6-1.0 gram range with some cranberries in the over 1.0 gram range.

According to MPEP 2131.03, because the 0.6-1.0 gram range can be said to touch on the claimed range of less than about 0.75 grams but does not disclose any specific examples falling within the claimed range, "the claimed subject matter must be disclosed in the reference 'with sufficient specificity to constitute anticipation under the statute.'" Of course, the instant case is not that of a disclosed range including a claimed range, but of a disclosed range including examples which may or may not fall within the claimed range. Furthermore, under

the claim limitation substantially all of the cranberries in one of Stang et al.'s disclosed 0.6-1.0 gram ranges must be within the claimed range to anticipate a claim which requires that substantially every cranberry have a mature mass of less than about 0.75 grams.

Also, it is noted that of all the examples disclosed in Tables 1 and 3, only the ABG 3001 example disclosed in Table 1 lacks a substantial amount of cranberries definitively outside of the claimed range, i.e., 1 cranberry in the ABG 3001 yield of 21 cranberries is over 1.0 gram. Therefore, the 102(b) rejection of independent claims 1 and 39 can be upheld only if the Stang et al. reference discloses "with sufficient specificity to constitute anticipation under the statute" that the 16 cranberries (of the ABG 3001 example) which are in the 0.6-1.0 gram range are substantially all between 0.6 and 0.75 grams and that none of the 16 cranberries are in the larger range between 0.75 and 1.0 grams.

Stang et al. clearly does not make such a disclosure with any type of specificity let alone sufficient specificity to constitute anticipation under the statute. Furthermore, to assume that the cranberries disclosed as being in a broad range (0.6-1.0g) were in fact part of a range less than half of the size of the disclosed range (0.6-0.75g) would question the publishing scientist's acumen in reporting his data.

Therefore, because Stang et al. does not disclose the claimed requirements of substantially all the cranberries having a mature mass of less than 0.75 grams, the rejection of independent claims 1 and 39 and all claims depending therefrom is traversed by amendment and/or argument. The Applicant respectfully requests that the 102(b) rejection of claims 1-11, 18, 39, 45-50 and 54 be withdrawn.

35 USC 103(a) rejections

Claims 12-17, 19-38, 40-44 and 51-53 were rejected under 35 USC 103(a) as being obvious over Stang et al. The Office Action states that "while the relationship between GA₃ ppm and Fruit Set (%), and GA₃ and Fruit Weight (g) are... not linear, it would be obvious to one of ordinary skill of the art, upon examination of Table 3, to discern the trend that increasing GA₃ ppm would tend to increase Fruit Set (%) and decrease Fruit Weight (g)."

Without regard to this noted "trend" it is agreed that Stang et al. does not teach any application of growth regulators to cranberry plants that would result in the claimed fruit set percentage or cranberry weight which are required in the Applicant's claims.

Turning to Stang et al. data, the Applicant has summarized the disclosed data for the two compositions which were applied at a constant rate in more than two different types of treatments (number of applications). ABG 3028C (GA₃) was applied at a rate of 25 ppm a.i. in four separate studies of varying numbers of applications. Four applications of ABG 3028C resulted in a fruit set of 44%, a mean berry weight of 0.8 grams, and 18 berries at 0.5 g, 22 berries between 0.6-1.0 grams and 6 berries over 1.0 gram. Two applications of ABG 3028C resulted in a fruit set of 51%, a mean berry weight of 0.7 grams, and 22 berries at 0.5 g, 33 berries between 0.6-1.0 grams and 9 berries over 1.0 gram. One application of ABG 3028C at full bloom plus seven days resulted in a fruit set of 35%, a mean berry weight of 0.8 grams, and 8 berries at 0.5 g, 13 berries between 0.6-1.0 grams and 6 berries over 1.0 gram. One application of ABG 3028C at full bloom resulted in a fruit set of 46%, a mean berry weight of 0.8 grams, and 8 berries at 0.5 g, 21 berries between 0.6-1.0 grams and 8 berries over 1.0 gram. As can be seen in the tables below, this data does not suggest the Applicant's claimed levels of fruit set and berry weight nor does it include any trend toward such numbers.

ABG 3028C applied at 25 ppm a.i.

<u>Fruit set</u>	<u>Mean weight</u>	<u>Small berry (< 0.6 grams) content</u>
51% (2 applications)	0.8 (4 applications)	37% (4 applications)
46% (1 application at full bloom)	0.8 (1 application at full bloom)	34% (2 applications)
44% (4 applications)	0.8 (1 application at full bloom+7)	30% (1 application at full bloom+7)
35% (1 application at full bloom+7)	0.7 (2 applications)	22% (1 application at full bloom)

In fact, the data concerning the application of ABG 3028C does not even suggest that increased fruit set can be obtained with the desired number of small berries. For example, in view of the data it appears that between 1 and 2 applications of ABG 3028C results in the highest fruit set. However, such applications also lead to the fewest number of small berries in a yield.

On the other hand, the data corresponding to the application of ABG 3077 at 75 ppm a.i. does show a rough order of increasing fruit set with decreasing berry weight.

ABG 3077 applied at 75 ppm a.i.

<u>Fruit set</u>	<u>Mean weight</u>	<u>Small berry (< 0.6 grams) content</u>
57% (4 applications)	0.7 (4 applications)	44% (4 applications)
50% (2 applications)	0.8 (2 applications)	37% (2 applications)
43% (1 application at full bloom)	0.8 (1 application at full bloom)	27% (1 application at full bloom)
36% (1 application at full bloom+7)	1.1 (1 application at full bloom+7)	9% (1 application at full bloom+7)

This data demonstrates that, through treatment with plant growth regulators, increasing fruit sets up to 57% was possible while increasing the small berry content of a cranberry yield up to 44%. In view of the Office Action's assertion that the Applicant's claimed levels of fruit set and small berry content are merely optimized ranges obvious in view of Stang et al., it is puzzling as to why, in the fifteen years between the Stang study and the filing of this application no one has attained either fruit sets of at least about 80% or yields of cranberries in which substantially 100% of the berries have a mature mass of less than about 0.75 grams.

In fact, the trend of increasing fruit sets and decreasing berry weights through treatment with growth regulators clearly should have lead to the claimed levels of fruit set and berry weight if such claimed levels were achievable by experimenting using routine skill in the art. However, since such routine experimentation has not led to the achievement of the claimed levels, or any levels approaching the claimed levels – as evidenced by the lack of any reference located by either the Applicant or Patent Office which discloses such levels – it cannot be said that fruit sets of above about 80% and yields having substantially all cranberries of less than about 0.75 grams could be obtained using routine experimentation.


Furthermore, there has been a long felt need in the field of cranberry cultivation for increased fruit sets as evidenced by the various studies relating to fruit set improvement previously submitted in the Applicant's Information Disclosure Statement. Yet, heretofore there has been achievement of fruit sets of only about 57%. As claimed, the Applicant has achieved, through his inventive method, fruits sets of 80% and higher and 90% and higher. No one in the field of cranberry cultivation has achieved any results in the vicinity of such elevated percentages.

Finally, with respect to the levels of miniature cranberries in cranberry yields, it is noted that, while Stang et al. does disclose reduced masses resulting from growth regulator treatment, Stang et al. does not disclose, suggest or imply by trend the substantially complete elimination of berries larger than 0.75 grams. In fact, in every study performed by Stang et al. there remained at least one cranberry over 1.0 gram and a majority of cranberries between 0.6 and 1.0 grams. As stated above, Stang et al. does not provide any suggestion that the cranberries between 0.6 and 1.0 grams are actually between 0.6 and 0.75 grams. In fact, such a assumption would go against the likely even distribution within the 0.6 -1.0 gram range.

In view of the lack of any references which disclose either fruit set levels or cranberry yields with high percentages of miniature cranberries (<0.75 grams) anywhere near the Applicant's claimed levels, the Applicant argues that such levels are not mere optimizations of the prior art and that the claims including such levels are not obvious in view of Stang et al. Therefore, the 103(a) rejection of claims 12-17, 19-38, 40-44, 51 and 53 has been traversed by argument and the Applicant respectfully requests that the 103(a) rejection of these claims be withdrawn.

The Applicant believes that all rejections have been traversed by amendment and argument and all claims are in proper form for allowance. Early favorable action is earnestly solicited. The Examiner is invited to call the undersigned attorney if that would be helpful in facilitating resolution of any issues which might remain.

Respectfully submitted,


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Mark-up Version to Show Claim Revisions

1. (amended) A method for commercially growing miniature cranberries comprising applying to cranberry plants a plant-growth-regulating composition during the bloom period in an amount such that [the cranberries have] substantially every cranberry has a mature mass of less than about 0.75 [grams/cranberry] grams.

16. (amended) The method of claim 1 wherein [the cranberries have] substantially every cranberry has a mature mass of about 0.2-0.6 [gram/cranberry] grams.

17. (amended) The method of claim 1 wherein [the cranberries have] substantially every cranberry has a mature mass of about 0.3-0.5 [gram/cranberry] grams.

46. (as originally filed) The yield of claim 45 wherein the yield is produced by applying to the plant a plant-growth-regulating composition when about 50-90% of flowers on the plant have opened.

[46] 47. (amended) The yield of claim 45 wherein the yield is produced by applying to the plant a plant-growth-regulating composition when about 60-80% of flowers on the plant have opened.

[47] 48. (amended) The yield of claim 45 wherein the plant-growth-regulating composition includes an active ingredient which is gibberellin.

[48] 49. (amended) The yield of claim 45 wherein a solution including the composition is applied to the plant.

[49] 50. (amended) The yield of claim 48 wherein the solution is an aqueous solution.

[50] 51. (twice amended) The yield of claim 49 wherein the composition is GA₃.

[51] 52. (amended) The yield of claim 48 wherein the composition is commercially applied to cranberry plants and the solution has a concentration and is applied in an amount so that about 10-80 grams of active ingredient are effectively applied per acre covered by plants.